The

Cane Growers' Quarterly

—Bulletin—

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Farm Fertility Trials.

Results of the 1940 Season.

THIS issue of the Bulletin is taken up by a presentation of the results of all trials harvested from selected sugar farms during 1940. The fertility trials assume a new significance at this time, as not only is some difficulty being experienced in obtaining full supplies of the necessary plant-food materials which must come from overseas, but the price of these commodities has also risen. It is therefore more than ever important that the farmer should make intelligent use of available fertilizers: this is a matter of national as well as of individual economy. We would therefore urge the canegrower to study the results and conclusions carefully to determine whether he may learn from the discussions something which will enable him to apply a more rational manuring programme than he has employed heretofore.

It should not be necessary to recount the basic plan employed in planning these trials. This has been presented in detail in previous years. Suffice it to say that the three simple components—sulphate of ammonia, superphosphate, and muriate of potash—are applied in various combinations, and from the resulting yields, it is possible to deduce which of the individual plantfoods is responsible for any economic crop gains. On the evidence of these results, suggestions are given whereby soils of this character may be treated, employing standard commercial mixtures, &c., to provide the materials necessary to supplement the normal supply of the land.

The financial gains actually recorded in the trials are given as a guide. Fertilizer costs are based on current manurial values, and allowance is made for freight and costs of application. Sugar values have been assessed at £17 per ton, which should be exceeded, at least for No. 1 pool quotas.

A note of warning might be repeated here for the benefit of the farmer attempting to relate the results of the trials presented to what might be expected on his lands. He should be guided first and foremost by the **soil type** and the **district.** No matter how attractive the results may appear, the farmer must not expect to get on forest lands in Southern Queensland results similar to those obtained with a potash-rich mixture on red volcanic soils at Innisfail, by using such a combination of nutrients. On his soil, phosphate-rich mixtures will be needed.

We would again emphasise the necessity for observing what we have pointed out repeatedly: that substantial gains from nitrogenous manures are seldom recorded with plant cane following a good green manure crop. In times of emergency particularly should this be noted, and every acre of fallow land should be given the benefit of a leguminous crop ploughed under and rotted just prior to planting the cane. This will save the farmer money and release a proportion of valuable soluble nitrogen for use with ratoons.

ACKNOWLEDGEMENT.

We have pleasure in acknowledging once again the generous assistance afforded by the following firms, by the supply of the fertilizers necessary for the farm trial project:—

Messrs. A.C.F. and Shirley Fertilizers;

Potash (Australasia) Pty. Limited.

The Director also extends thanks to those growers who have assisted in carrying these trials through successfully; and to the mill staffs which have co-operated. Without this support, the project would not be possible.

NORTHERN DISTRICTS.

Mr. W. E. Grigg's Farm, Kamma.

Soil Type.—White schist loam.
Variety.—Clark's Seedling.
Nature of Crop.—First Ratoon.
Age of Crop.—12 months.
Harvested.—July, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	13·5	16·4	..
200 lb. sulphate of ammonia	18·2	16·1	5 10 0 Gain
400 lb. sulphate of ammonia	19·3	15·8	5 0 0 Gain
No superphosphate	16·4	16·7	..
230 lb. superphosphate	17·0	16·3	0 15 0 Loss
460 lb. superphosphate	17·7	15·3	3 0 0 Loss
No muriate of potash	15·2	16·3	..
170 lb. muriate of potash	17·7	16·3	2 10 0 Gain
340 lb. muriate of potash	18·1	16·2	1 10 0 Gain

DISCUSSION.

The plant crop, harvested during 1939, showed small crop gains from applications of each of the three plantfoods. The first ratoons gave a repetition of the performance, in so far as phosphate and potash were concerned; but the gain from sulphate of ammonia was almost 6 tons of cane per acre. This was forecast when the trial was set out; for the soil shows by its colour that it is deficient in humus, and hence in nitrogen.

Sugar Bureau No. 2 mixtures (or even No. 1 during a period of potash shortage) at the rate of 4 cwt. per acre should serve to make good the phosphate and potash requirements of the crop. Top dressings of sulphate of ammonia would then supply the necessary available nitrogen, and 2 bags per acre should prove an economical application for ratoons.

Mr. J. Cunningham's Farm, Smithfield, via Cairns.

Soil Type.—Sandy alluvial.
Variety.—H.Q. 409.
Nature of Crop.—Plant Cane.
Age of Crop.—15½ months.
Harvested.—September, 1940.

RESULTS.

Fertiliser applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	24·6	16·9	..
200 lb. sulphate of ammonia	25·4	17·4	1 15 0 Gain
400 lb. sulphate of ammonia	26·1	17·2	0 13 0 Gain
No superphosphate	25·2	16·5	..
234 lb. superphosphate	24·2	17·3	0 10 0 Gain
468 lb. superphosphate	26·7	16·5	0 19 0 Gain
No muriate of potash	23·0	17·2	..
210 lb. muriate of potash	26·9	17·2	5 2 0 Gain
420 lb. muriate of potash	26·2	16·7	0 3 0 Gain

DISCUSSION.

Though the land was in excellent condition and the soil moisture good when the cane was planted, the strike was rather erratic; and the abnormally dry months which followed caused a severe set-back to the crop on this light soil. Yields were irregular, and it is not safe to attach any precise significance to the apparent crop responses which were recorded. It does appear that benefit followed the applications of potash, but the ratoons results would be necessary to confirm this conclusion.

Mr. J. McKenzie's Farm, Aloomba.

Soil Type.—Schist loam.
Variety.—S.J. 4.
Nature of Crop.—Second Ratoon.
Age of Crop.—14½ months.
Harvested.—October, 1940.

RESULTS.

Fertiliser applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	16·0	17·7	..
200 lb. sulphate of ammonia	21·7	18·3	10 15 0 Gain
400 lb. sulphate of ammonia	25·2	18·8	18 0 0 Gain
No superphosphate	20·0	18·1	..
200 lb. superphosphate	21·0	18·9	3 15 0 Gain
400 lb. superphosphate	21·8	18·3	2 10 0 Gain
No muriate of potash	20·8	18·6	..
150 lb. muriate of potash	20·0	17·6	5 17 0 Loss
300 lb. muriate of potash	22·0	18·0	2 5 0 Loss

DISCUSSION.

This is the third successive crop harvested from the site selected for the trial. While the gains from added phosphate and potash have been slight, nitrogen in the form of sulphate of ammonia, has produced striking results. Application of 400 lb. of this manure as top dressing produced a gain of 6.6 tons of cane with the first ratoons, while the second ratoons gave 9.2 tons extra yield. This represented the difference between a mediocre crop, and a very satisfactory ratoon.

A light application of Sugar Bureau No. 1 mixtures would serve to make up the phosphate and potash needs of this soil; but sulphate of ammonia at the rate of at least 400 lb. per acre should be applied to ratoons, especially older ratoons. This should be given in two equal top dressings.

Messrs. Llansola and Company's Farm, Garradunga.

Soil Type.—Red volcanic loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—14 months.
Harvested.—August, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	18·8	15·3	..
150 lb. sulphate of ammonia	18·3	15·5	1 5 0 Loss
300 lb. sulphate of ammonia	18·6	14·5	5 0 0 Loss
No superphosphate	18·1	14·4	..
225 lb. superphosphate	18·8	14·6	**0 15 0 Gain**
450 lb. superphosphate	18·8	14·3	0 15 0 Loss
No muriate of potash	11·5	15·3	..
180 lb. muriate of potash	20·8	15·5	**13 5 0 Gain**
360 lb. muriate of potash	23·4	15·8	**16 15 0 Gain**

DISCUSSION.

This trial was located within a section of the Goondi area which is characterised by a peculiar type of "red volcanic" soil which is particularly deficient in plantfood. This is reflected in the general cane yield recorded. Applications of sulphate of ammonia and superphosphate were without appreciable influence on crop growth, but a most striking result followed the application of potash even in light amounts. A dressing of 360 lb. per acre gave more than double the yield of the "no potash" plots, and the actual gain was almost 12 tons of cane per acre.

The need for a heavy and early application of this plantfood is obviously essential; and it is expected that arrangements can be made to allow farmers cultivating such soils to have a quota of Sugar Bureau No. 3 mixtures. Even such a potash-rich mixture would have to be applied at the rate of 6 cwt. per acre for best results.

The ratoons will probably need also a supplementary application of sulphate of ammonia.

Mrs. M. I. Anderson's Farm, Highleigh, Gordonvale.

Soil Type.—Schist loam.
Variety.—Oramboo.
Nature of Crop.—Plant Cane.
Age of Crop.—12 months.
Harvested.—June, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	25·5	16·2	..
200 lb. sulphate of ammonia	23·7	15·6	6 13 0 Loss
400 lb. sulphate of ammonia	25·2	16·0	4 7 0 Loss
No superphosphate	23·8	16·2	..
250 lb. superphosphate	25·1	16·2	1 5 0 Gain
500 lb. superphosphate	25·5	15·6	1 5 0 Loss
No muriate of potash	23·2	15·6	..
150 lb. muriate of potash	26·0	15·5	2 10 0 Gain
300 lb. muriate of potash	25·3	15·6	0 15 0 Gain

DISCUSSION.

This trial site had been well treated before planting; trash and green manure had been ploughed under, but the soil was rather dry at planting time, and the strike was irregular. Later slight grub damage was in evidence, and many of the stools were loose in the ground when the crop was harvested. Crop responses to the fertilizer applied were therefore erratic, and it would not be safe to draw definite conclusions.

The standard recommendations for schist loams should then be followed until more definite evidence is gathered.

Mr. M. Ridolfi's Farm, Babinda.

Soil Type.—Alluvial loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—13 months.
Harvested.—July, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	31·2	11·6	..
200 lb. sulphate of ammonia	36·0	11·7	3 7 0 Gain
400 lb. sulphate of ammonia	35·4	11·3	0 18 0 Loss
No superphosphate	33·2	11·0	..
240 lb. superphosphate	34·3	11·2	1 4 0 Gain
480 lb. superphosphate	35·1	11·8	4 5 0 Gain
No muriate of potash	33·6	11·3	..
160 lb. muriate of potash	34·2	11·0	2 10 0 Loss
320 lb. muriate of potash	34·8	11·9	1 10 0 Gain

DISCUSSION.

The land was green manured during the fallow period and a dressing of lime applied just before planting. The cane made excellent progress, and in its advanced state, suffered some wind damage during the cyclonic disturbance. The crop gains from phosphate and potash were slight, but a positive gain followed a light dressing of sulphate of ammonia, despite the green crop of the fallow. A light application of Sugar Bureau No. 1 mixtures should be applied to all crops, followed by sulphate of ammonia top dressings, especially for ratoons. At least 3 cwt. per acre can be expected to give a profitable return with first ratoons, while older ratoons may need an even heavier application.

Messrs. C. and M. Ghetti's Farm, Mourilyan.

Soil Type.—Red schist loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—14 months.
Harvested.—August, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	31·3	14·6	..
200 lb. sulphate of ammonia	30·3	14·9	1 10 0 Loss
400 lb. sulphate of ammonia	31·1	14·8	2 8 0 Loss
No superphosphate	30·2	15·2	..
200 lb. superphosphate	30·5	14·9	1 12 0 Loss
400 lb. superphosphate	31·9	15·0	0 4 0 Gain
No muriate of potash	28·2	14·8	..
150 lb. muriate of potash	30·8	14·9	2 17 0 Gain
300 lb. muriate of potash	33·7	15·1	6 15 0 Gain

DISCUSSION.

While fallow, this field had the benefit of a good green manure crop and an application of burnt lime. Early stimulus from phosphate was later overshadowed by the need for potash, and finally, the heavier application of this plantfood brought about a crop increase of 5.5 tons per acre. Phosphate did appear to produce a slight gain also.

Sugar Bureau No. 2 or No. 3 mixtures, in appropriate amounts, should serve to make good these deficiencies. No. 3 mixtures would be urged were there no restrictions on the use of potash supplies. Nitrogen has been without influence on the plant crop yield, though doubtless gains will be experienced with the ratoons. Schist soils are noteworthy in this regard, and the use of sulphate of ammonia on ratoons is most important.

Mr. C. Carbone's Farm, Garradunga.

Soil Type.—Red volcanic loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—14½ months.
Harvested.—September, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	21·3	16·8	..
250 lb. sulphate of ammonia	19·6	16·3	6 5 0 Loss
500 lb. sulphate of ammonia	20·9	16·6	5 3 0 Loss
No superphosphate	20·0	16·6	..
250 lb. superphosphate	21·6	16·6	1 17 0 Gain
500 lb. superphosphate	20·1	16·7	1 3 0 Loss
No muriate of potash	14·4	16·4	..
300 lb. muriate of potash	22·7	16·7	12 5 0 Gain
600 lb. muriate of potash	24·6	16·7	13 0 0 Gain

DISCUSSION.

The results of this trial should be compared with those recorded from the farm of Liansola and Co. The soils are very similar in character, and in each case the crop gain was due almost exclusively to potash. Heavy dressings were given in this trial, and it is evident that the most economical application was in excess of 300 lb. of muriate of potash per acre.

Liming Trial.

There is a special section of the red volcanic lands of the Innisfail district which shows by acidity tests that the soils may need liming. Such a site was selected for the purposes of a lime trial and the results are recorded below:—

Messrs. Todd Bros'. Farm, Garradunga.

Soil Type.—"Red volcanic" loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—12 months.
Harvested.—July, 1940.

Crop Yields.

Treatment.	Cane per Acre.
	Tons.
No Lime	13·3
Lime	17·3

DISCUSSION.

While the crop yield was generally low, the benefits from the treatment (2 tons earth lime per acre) are clearly evident. An inspection of the young ratoons reveals a similar influence, and it is probable that liming such land, followed by fertilizer treatment to supply an abundance of available potash, will serve to convert these soils to a reasonable state of fertility.

Mr. E. J. Mende's Farm, Mena Creek, South Johnstone.

Soil Type.—Red volcanic loam.
Variety.—Badila.
Nature of Crop.—First Ratoon.
Age of Crop.—12 months.
Harvested.—September, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	25·3	16·9	..
180 lb. sulphate of ammonia	26·1	16·5	1 12 0 Loss
360 lb. sulphate of ammonia	25·5	16·5	3 19 0 Loss
No superphosphate	24·3	16·8	..
210 lb. superphosphate	26·6	16·3	**1 4 0 Gain**
420 lb. superphosphate	26·0	16·3	0 9 0 Loss
No muriate of potash	23·3	16·8	..
180 lb. muriate of potash	26·3	17·1	**4 15 0 Gain**
360 lb. muriate of potash	27·3	16·0	**0 10 0 Gain**

DISCUSSION.

The plant crop, harvested during 1939, gave a very definite gain from potash application while phosphates also exercised their influence. The first ratoon results recorded at this time fully bear out the conclusions drawn a year ago. Sugar Bureau No. 2 mixtures will make good the natural plantfood deficiencies.

It is interesting to note that nitrogen in the form of sulphate of ammonia did not bring about any yield increase either with plant or ratoon cane. This is rather unusual, but is sometimes recorded on red volcanic loams.

Messrs. Rungert and Co.'s Farm, Japoon.

Soil Type.—Alluvial loam.
Variety.—Badila.
Nature of Crop.—Plant Cane.
Age of Crop.—14 months.
Harvested.—September, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	26·0	17·3	..
210 lb. sulphate of ammonia	25·8	17·2	2 7 0 Loss
420 lb. sulphate of ammonia	25·2	16·8	6 12 0 Loss
No superphosphate	22·3	17·1	..
210 lb. superphosphate	26·2	17·5	7 15 0 Gain
420 lb. superphosphate	28·5	16·9	8 12 0 Gain
No muriate of potash	24·1	16·9	..
120 lb. muriate of potash	26·9	17·2	5 0 0 Gain
240 lb. muriate of potash	26·0	17·3	2 17 0 Gain

DISCUSSION.

A fair green manure crop was ploughed under during the fallow. Early in the growth of the cane crop, response to phosphate was noted, and this is borne out in the ultimate gains from this plantfood. There appears to be a slight gain also from potash, though this may require confirmation. In any event, Sugar Bureau No. 1 mixtures should make good any deficiencies of these plantfoods, as is the customary experience with granitic alluvial loams. No gains were recorded for applications of sulphate of ammonia, but these may be expected with the ratoons.

Mr. C. H. Fereday's Farm, Tully.

Soil Type.—Gravelly loam.
Variety.—Badila.
Nature of Crop.—First Ratoon.
Age of Crop.—11 months.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	17·2	16·9	..
175 lb. sulphate of ammonia	20·4	16·7	3 10 0 Gain
350 lb. sulphate of ammonia	22·1	17·2	6 14 0 Gain
No superphosphate	19·9	16·7	..
200 lb. superphosphate	19·6	17·0	0 5 0 Loss
400 lb. superphosphate	20·3	16·4	1 10 0 Loss
No muriate of potash	19·1	17·5	..
150 lb. muriate of potash	20·7	16·0	3 0 0 Loss
300 lb. muriate of potash	20·1	16·4	4 0 0 Loss

DISCUSSION.

The plant crop harvested from this site showed slight gains from phosphate and potash, but the major response was due to nitrogen. This result was experienced also with the first ratoon yields recorded above. It is rather remarkable that the Tully granitic gravelly loams stand up well to cropping, provided they receive a modicum of mixed manure, followed by reasonable top dressings of sulphate of ammonia. A light application of Sugar Bureau No. 1 mixtures is therefore recommended as a basic treatment, followed by top dressings of sulphate of ammonia, applying at least 3 cwt. per acre to ratoons.

It follows that green manuring should be practised on these lands during all fallow periods.

CENTRAL DISTRICTS.

Mr. P. Kirwan's Farm, Dumbleton, Mackay.

Soil Type.—Old alluvial loam.
Variety.—M. 1900.
Nature of Crop.—First Ratoon.
Age of Crop.—10 months.
Harvested.—September, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	8·7	17·6	..
200 lb. sulphate of ammonia	13·5	17·8	8 16 0 Gain
400 lb. sulphate of ammonia	17·1	17·8	14 5 0 Gain
No superphosphate	12·9	17·6	..
200 lb. superphosphate	13·2	17·6	0 2 0 Loss
400 lb. superphosphate	13·1	17·8	0 10 0 Loss
No muriate of potash	12·0	17·7	..
100 lb. muriate of potash	12·9	17·9	1 3 0 Gain
200 lb. muriate of potash	14·3	17·6	2 16 0 Gain

DISCUSSION.

It will be recalled that this farm is one which had not been subjected to systematic fertilizer applications, and the plant crop showed definite gains from all plantfoods applied. The ratoon yields bear out the conclusions drawn a year ago: potash appears to be in greater demand then phosphate, so that Sugar Bureau No. 2 mixtures are preferable to No. 1. But the need for adequate supplies of nitrogen is most clearly in evidence. With the plant crop the gain was 6.2 tons of cane per acre, while the first ratoons showed a crop increase of 8.4 tons with 400 lb. of sulphate of ammonia.

Green manuring of such land is most important, and even if plant cane should need no supplementary treatment, the ratoons will require at least 3 cwt. of sulphate of ammonia per acre.

Messrs. Gill and Co.'s Farm, Rocklea, Mackay.

Soil Type.—Alluvial sandy loam.
Variety.—P.O.J.2725.
Nature of Crop.—First Ratoon.
Age of Crop.—12 months.
Harvested.—November, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	27·7	16·0	..
210 lb. sulphate of ammonia	29·6	16·0	1 8 0 Gain
420 lb. sulphate of ammonia	31·7	15·2	0 15 0 Loss
No superphosphate	28·9	15·8	..
210 lb. superphosphate	30·9	15·9	2 19 0 Gain
420 lb. superphosphate	29·2	15·9	0 8 0 Loss
No muriate of potash	31·2	16·0	..
150 lb. muriate of potash	28·9	15·2	8 9 0 Loss
300 lb. muriate of potash	29·1	15·5	8 1 0 Loss

DISCUSSION.

The plant crop harvested from this site was an excellent one, and no gains were recorded for any of the manures applied. The first ratoons yields were also satisfactory: no increases were experienced for applications of phosphate or potash, but nitrogen was responsible for a positive gain.

Even though no mixed manure were applied to crops produced on this rich field, ratoons should at least be given a moderate application of sulphate of ammonia. Older ratoons will probably need this manure in more liberal amounts.

Mr. T. H. Ball's Farm, Home Hill.

Soil Type.—Alluvial loam (forest).
Variety.—Badila.
Nature of Crop.—First Ratoon.
Age of Crop.—13 months.
Harvested.—October, 1940.

RESULTS.

Fertilizer Applied per Acre.			Crop Yields.		Cost of Fertilizer and Application.	Net Return (per acre) from extra Fertilizer over P.K.	
Sulphate of Ammonia. (N)	Super-phosphate. (P)	Muriate of Potash. (K)	Cane per Acre.	C.C.S. in Cane.		Profit.	Loss.
			Tons.	Per cent.	£ s. d.	£ s. d.	£ s. d.
..	200	150	8·6	15·7	2 2 0	..	..
120	200	150	9·6	16·0	3 6 0	0 17 0	..
240	200	150	11·8	16·2	4 4 0	4 7 0	..
240	200	150	14·8	15·8	4 4 0	8 17 0	..
240	200	150	13·8	15·9	4 4 0	7 8 0	..

DISCUSSION.

The plant crop harvested from this site showed outstanding benefits from sulphate of ammonia. It was anticipated that similar responses would be obtained in the ratoons, but the trial was somewhat vitiated by the absence of the local field officer which prevented the full fertilizer treatments being applied.

It will be observed, however, that sulphate of ammonia was again beneficial, although the ratoon crop can scarcely be regarded as a successful one.

Mr. G. J. Rogers' Farm, Peri, Mackay.

Soil Type.—Forest sandy loam.
Variety.—M.1900.
Nature of Crop.—First Ratoon.
Age of Crop.—9 months.
Harvested.—August, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	11·8	16·1	..
175 lb. sulphate of ammonia	17·7	16·0	8 10 0 Gain
350 lb. sulphate of ammonia	20·2	16·6	12 19 0 Gain
No superphosphate	16·6	17·2	..
200 lb. superphosphate	16·0	17·1	1 19 0 Loss
400 lb. superphosphate	17·1	16·4	2 8 0 Loss
No muriate of potash	16·5	16·6	..
125 lb. muriate of potash	16·6	16·4	1 8 0 Loss
250 lb. muriate of potash	16·7	17·5	0 10 0 Gain

DISCUSSION.

This field was well worked, but the crop suffered due to adverse climatic conditions in the spring and early summer. Potash was without influence on the crop yield, while phosphate did not appear to be deficient to the same extent as was shown by the plant crop; but the nitrogen treatment which produced a gain of 3.2 tons per acre with the plant cane, gave an increase of 8.4 tons with the ratoons.

A light treatment of Sugar Bureau No. 1 mixtures should serve as a basic dressing to all crops on this field, following by sulphate of ammonia at the rate of 2 cwt. per acre for plant cane, and 3 cwt. at least for ratoons. The value of green manuring such land cannot be overstressed.

Mr. A. M. Rae's Farm, Boldon.

Soil Type.—Forest sandy loam.
Variety.—M.1900.
Nature of Crop.—Plant Cane.
Age of Crop.—15 months.
Harvested.—October, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	16·5	15·4	..
180 lb. sulphate of ammonia	17·8	15·8	1 14 0 Gain
360 lb. sulphate of ammonia	18·9	16·4	3 14 0 Gain
No superphosphate	17·9	15·7	..
240 lb. superphosphate	16·4	16·0	2 6 0 Loss
480 lb. superphosphate	18·9	16·5	2 7 0 Gain
No muriate of potash	17·8	15·5	..
140 lb. muriate of potash	18·4	14·5	3 1 0 Loss
280 lb. muriate of potash	17·0	14·4	6 7 0 Loss

DISCUSSION.

This crop had a rather difficult early life, and the backward nature of the cane when it received the wet season rains is reflected in the yields. Nitrogen and phosphate appear to have produced small though definite crop gains, and a light application of Sugar Bureau No. 1 mixture, followed by a moderate top dressing of sulphate of ammonia should prove beneficial. Nitrogen may be expected to produce substantial results on ratoons.

Mr. C. F. Windsor's Farm, Chelona, Mackay.

Soil Type.—Forest sandy loam.
Variety.—Clark's Seedling.
Nature of Crop.—First Ratoon.
Age of Crop.—12 months.
Harvested.—July, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	6·7	18·0	..
200 lb. sulphate of ammonia	10·9	17·5	6 8 0 Gain
400 lb. sulphate of ammonia	14·3	17·6	12 1 0 Gain
No superphosphate	10·3	17·8	..
200 lb. superphosphate	10·7	18·1	0 12 0 Gain
400 lb. superphosphate	10·9	17·5	0 12 0 Loss
No muriate of potash	9·1	17·6	..
150 lb. muriate of potash	11·3	18·1	4 3 0 Gain
300 lb. muriate of potash	11·6	18·2	3 13 0 Gain

DISCUSSION.

Due to unfavourable conditions experienced during the spring and early summer, this ratoon crop made a poor start from which it did not recover. Nevertheless, the satisfactory crop increases obtained from manures with the plant crop were repeated by the ratoons. Potash was responsible for a gain of 2.5 tons of cane per acre, while the influence of nitrogen was to more than double the yield from the "check" plots. A light application of Sugar Bureau No. 1 or 2 mixtures should serve to overcome any deficiencies of potash, but the sulphate of ammonia treatments should provide at least 3 cwt. per acre for plant cane and as much as 4 cwt. for ratoons. The benefits to be derived from green manuring such land do not require emphasising.

Mr. F. S. Reidy's Farm, Landsdowne Road, Mackay.

Soil Type.—Sandy alluvial loam. **Age of Crop.**—11 months.
Variety.—Clark's Seedling. **Harvested.**—July, 1940.
Nature of Crop.—First Ratoon.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	8·4	17·4	..
150 lb. sulphate of ammonia	12·6	17·7	7 15 0 Gain
300 lb. sulphate of ammonia	14·3	17·8	10 8 0 Gain
No superphosphate	12·3	18·0	..
250 lb. superphosphate	10·9	17·7	4 11 0 Loss
500 lb. superphosphate	12·1	17·6	2 6 0 Loss
No muriate of potash	11·0	18·0	..
125 lb. muriate of potash	12·0	17·5	0 2 0 Gain
250 lb muriate of potash	12·2	17·4	0 15 0 Loss

DISCUSSION.

The yields recorded for the ratoon crop follow closely those presented a year ago for the plant cane. Nitrogen in the form of sulphate of ammonia was the outstanding treatment and was responsible for a crop increase of about 6 tons of cane per acre.

Doubtless the yielding capacity of this field will be greatly improved after liming. When replanted, a basic application of Sugar Bureau No. 1 mixture would serve to avoid any deficiency of phosphate or potash, while sulphate of ammonia top dressings should be profitable in amounts of 2-3 cwt. per acre for plant cane, and 3 cwt. at least for ratoons. Heavier amounts would be necessary with consistent irrigation.

Mr. H. Barfield's Farm, Tannalo.

Soil Type.—Forest sandy loam.
Variety.—M.1900.
Nature of Crop.—Plant Cane.
Age of Crop.—16 months.
Harvested.—November, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	18·7	16·6	..
150 lb. sulphate of ammonia	20·7	16·8	2 12 0 Gain
300 lb. sulphate of ammonia	21·4	17·4	4 17 0 Gain
No superphosphate	20·4	15·4	..
200 lb. superphosphate	19·9	17·2	4 0 0 Gain
400 lb. superphosphate	20·6	17·2	4 13 0 Gain
No muriate of potash	19·8	17·1	..
125 lb. muriate of potash	19·9	15·7	5 0 0 Loss
250 lb. muriate of potash	21·1	17·4	1 5 0 Gain

DISCUSSION.

A good crop of Gambia pea was ploughed under during the preceding fallow and the land was in excellent tilth when planted. The dry season which followed checked the growth of the crop, and conditions generally were far from satisfactory. Little benefit from manures was recorded, and this was due almost entirely to the use of sulphate of ammonia. Even better results from this fertilizer may be expected with the ratoons.

SOUTHERN DISTRICTS.

Special attention is directed towards the results of trials harvested during the past year in the southern cane districts. A few years ago it was seldom that striking benefits from manures could be measured; but since the new cane varieties have been brought into cultivation, yields have been such as to introduce serious plantfood deficiencies, unless the appropriate fertilizer mixtures are employed.

It is important, also, to study the particular requirements of individual soil types: in the results of the small number of trials presented at this time, it will be found that nitrogen, phosphoric acid and potash are each dominant in their influence on yields.

Mr. F. Jacobsen's Farm, Rubyanna Road, Bundaberg.

Soil Type.—Alluvial loam. **Age of Crop.**—31 months.
Variety.—P.O.J.2878. **Harvested.**—September, 1940.
Nature of Crop.—Plant Cane (standover).

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	53·3	14·9	..
150 lb. sulphate of ammonia	63·1	13·7	1 7 0 Gain
300 lb. sulphate of ammonia	65·8	15·0	16 12 0 Gain
No superphosphate	61·7	15·1	..
200 lb. superphosphate	61·3	14·1	10 10 0 Loss
400 lb. superphosphate	59·1	14·8	7 10 0 Loss
No muriate of potash	56·8	14·6	..
100 lb. muriate of potash	64·3	14·5	8 14 0 Gain
200 lb. muriate of potash	61·1	15·5	12 17 0 Gain

DISCUSSION.

This field was green manured before planting. The cane was stood over and harvested when 2½ years old. The tonnages recorded were high, and the benefits from nitrogen were outstanding. This would be anticipated, under the conditions. The results also indicate gains from potash, which is unusual for alluvial soils.

Tentatively, Sugar Bureau No. 1 mixtures are recommended, in moderate amounts, followed by top dressings of sulphate of ammonia. With standover cane on such lands, at least 3 cwt. of the latter fertilizer should be applied per acre. With ratoons, even heavier applications may be necessary, and if possible a dressing just prior to the second growing season would be most beneficial.

Mr. T. Chappell's Farm, South Isis, Childers.

Soil Type.—Red volcanic loam. **Nature of Crop.**—First Ratoon (standover).
Variety.—P.O.J.2878. **Age of Crop.**—22½ months.

RESULTS.

Fertilizer Applied per Acre.			Crop Yields.		Cost of Fertilizer and Application.	Net Return (per acre) from Fertilizer.	
Sulphate of Ammonia. (N)	Super-phosphate. (P)	Muriate of Potash. (K)	Cane per Acre.	C.C.S. in Cane.		Profit.	Loss.
			Tons.	Per cent.	£ s. d.	£ s. d.	£ s. d.
..	..	..	43·3	17·0	..	..	..
180	240	..	51·3	16·8	2 10 0	10 0 0	..
180	..	300	50·1	16·8	4 5 0	6 3 0	..
..	240	300	51·5	16·2	3 7 0	4 17 0	..
180	240	300	55·1	16·8	4 19 0	14 2 0	..

DISCUSSION.

A heavy crop of plant cane was harvested from this trial in 1939; it showed definite gains from potash. The ratoon crop was stood over and it will be noted that the gains from all plantfoods were more substantial than with the plant cane. Nitrogen, phosphate and potash have all contributed to a very satisfactory financial gain. Sugar Bureau No. 2 mixtures, applied at the rate of 4-5 cwt. per acre, and followed by top dressings of sulphate of ammonia, notably on standover or ratoon crops, should serve to maintain high yields on land of this class.

Mr. E. H. Rehbein's Farm, Duncraggan Road, Bundaberg.

Soil Type.—Red volcanic loam.
Variety.—P.O.J.213.
Nature of Crop.—Second Ratoon.
Age of Crop.—11 months.
Harvested.—November, 1940.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	14·9	16·2	..
150 lb. sulphate of ammonia	24·5	16·8	16 16 0 Gain
300 lb. sulphate of ammonia	27·2	16·4	18 14 0 Gain
No superphosphate	22·4	16·6	..
120 lb. superphosphate	22·8	16·4	0 8 0 Loss
240 lb. superphosphate	21·4	16·2	3 15 0 Loss
No muriate of potash	19·9	16·4	..
150 lb. muriate of potash	22·1	16·7	3 10 0 Gain
300 lb. muriate of potash	24·5	16·7	6 5 0 Gain

DISCUSSION.

This is now the third crop which has been harvested from the trial site. The plant cane gave a response to potash only: the first ratoons showed a slight gain for this plantfood, but nitrogen produced a crop increase of 11.1 tons of cane per acre; the second ratoon results set out above show a gain of 4.6 tons of cane from 300 lb. of muriate of potash, and 12.3 tons further due to the application of 300 lb. of sulphate of ammonia.

All crops on this land should be given an initial application of Sugar Bureau No. 2 mixtures, followed by top dressings of sulphate of ammonia, at least for ratoons. First ratoons should be given not less than 3 cwt. of this fertilizer, while older ratoons will probably benefit from heavier applications.

Mr. B. Anderson's Farm, Elliott Road, Bundaberg.

Soil Type.—Red sandy loam. **Age of Crop.**—10½ months.
Variety.—P.O.J.2878. **Harvested.**—October, 1940.
Nature of Crop.—Second Ratoon.

RESULTS.

Fertilizer applied per Acre.	Crop Yields.		Net return per acre from each Plantfood Material.
	Cane per Acre.	C.C.S. in Cane.	
	Tons.	Per cent.	£ s. d.
No sulphate of ammonia	14·4	15·8	..
160 lb. sulphate of ammonia	19·4	16·1	7 10 0 Gain
320 lb. sulphate of ammonia	25·1	16·2	16 0 0 Gain
No superphosphate	12·3	15·6	..
160 lb. superphosphate	21·8	16·4	17 7 0 Gain
320 lb. superphosphate	24·7	16·6	22 10 0 Gain
No muriate of potash	19·8	16·3	..
120 lb. muriate of potash	19·8	16·0	1 17 0 Loss
240 lb. muriate of potash	19·3	16·1	3 6 0 Loss

DISCUSSION.

This trial has produced uniformly outstanding gains for the appropriate manures on all three crops. The heavier treatment with superphosphate produced successive gains of 11.7, 11.2, and 12.4 tons of cane per acre; potash has been uniformly without influence on yields, while nitrogen has produced gains of 4, 6, and 10.7 tons on successive crops.

This is the class of soil which requires an initial treatment with Sugar Bureau No. 1 mixtures at the rate of 5-6 cwt. per acre, followed by top dressings of sulphate of ammonia. Plant cane would require 2 cwt. of this fertilizer, while first ratoons would need at least 3 cwt. and older ratoons or standover cane even heavier dressings.

Mr. W. M. S. Oakes' Farm, Maroochy River.

Soil Type.—Alluvial loam. **Age of Crop.**—24 months.
Variety.—P.O.J.2878. **Harvested.**—September, 1940.
Nature of Crop.—Plant Cane (standover).

RESULTS.

Fertilizer Applied per Acre.			Crop Yields.		Cost of Fertilizer and Application.	Net Return (per acre) from Fertilizer.	
Sulphate of Ammonia. (N)	Super-phosphate. (P)	Muriate of Potash. (K)	Cane per Acre.	C.C.S. in Cane.		Profit.	Loss.
			Tons.	Per cent.	£ s. d.	£ s. d.	£ s. d.
..	..	..	31·5	16·5	..	..	..
300	240	..	35·7	16·8	3 8 0	5 5 0	..
300	..	240	37·5	16·5	4 13 0	5 8 0	..
..	240	240	36·4	16·3	2 18 0	4 4 0	..
300	240	240	38·7	16·4	5 7 0	6 3 0	..

DISCUSSION.

This field was limed before planting. The strike was slow but the cane made good growth during the first wet season. All pantfoods contributed to the crop gains recorded, but potash appeared to be the chief deficiency. This is rather unusual for alluvial lands, but the lack of this plantfood was suspected from tests made before the trial was set out.

In general, Sugar Bureau No. 1 mixtures suit this type of soil, applied at the rate of 3–4 cwt. per acre. Under special conditions, where potash deficiency has been established, potash-rich mixtures might be preferable for two or three years. Top dressings of sulphate of ammonia, to provide 2 cwt. per acre on plant cane and 3 cwt. on standover or ratoon crops, should complete a satisfactory fertilizer programme.

Messrs. H. H. and A. G. Owen's Farm, Paynter's Creek, Nambour.

Soil Type.—Alluvial sandy loam.
Variety.—Co.290.
Nature of Crop.—Second Ratoon.
Age of Crop.—11 months.
Harvested.—September, 1940.

RESULTS.

Fertilizer Applied per Acre.			Crop Yields.		Cost of Fertilizer and Application.	Net Return (per acre) from Fertilizer.	
Sulphate of Ammonia. (N)	Super-phosphate. (P)	Muriate of Potash. (K)	Cane per Acre.	C.C.S. in Cane.		Profit.	Loss.
			Tons.	Per cent.	£ s. d.	£ s. d.	£ s. d.
..	..	..	23·7	14·2	..	..	..
240	300	..	32·0	14·0	3 3 0	6 18 0	..
240	..	120	33·7	13·8	3 5 0	8 0 0	..
..	300	120	23·2	14·3	2 2 0	..	2 8 0
240	300	120	34·7	13·9	4 2 0	8 18 0	..

DISCUSSION.

This is the third successive crop which has been harvested from the trial site. Crops have been consistently satisfactory, and in each case the gain in yield was almost entirely due to sulphate of ammonia. The crop increases from this fertilizer were 4.8, 8.2 and 11.5 tons per acre respectively.

The second ratoon crop gave indications of phosphate and potash deficiency, as would be expected with the removal annually of heavy cane tonnages. Sugar Bureau No. 1 mixtures should therefore be applied consistently at the rate of 3 cwt. per acre, followed by top dressings of sulphate of ammonia, supplying 2 cwt. per acre for plant cane, and 3 cwt. for ratoons.

Green manuring is strongly to be recommended as a fallow practice.

Varietal Trials.

In the following pages are summarised the results of some 43 variety trials which were carried out on cane farms of the various districts during the year. A perusal of these pages will show that seedling canes raised by the Bureau predominate in the trials and that they have yielded excellent results in general. During the past few years, the seedling-raising programme of the Bureau has been re-organised, expanded, and intensified and a steady stream of new varieties is now proceeding from the Experiment Stations to farm trial each year. Reference should also be made to the Annual Report of the Director for details of varietal trials carried out on the three Stations.

Seedling raising in Queensland is handicapped as in no other country by the presence of the array of serious sugar-cane diseases which this country unfortunately possesses. In consequence many seedlings of excellent promise must be discarded on account of undue susceptibility to some particular disease; and for this reason, also, varieties which may gain prominence in one part of the State cannot be propagated in another part. At the same time, it is always appreciated that disease control must be considered as an economic proposition and a seedling should not be discarded unless the monetary value of the losses suffered by it (or indirectly caused by it through assisting to spread a particular disease) are likely to be greater in magnitude than the probably increased returns resulting from the greater vigour or sugar content of that cane. It is for this reason, for example, that Q.25 has been released for planting in Southern Queensland although it is known to be susceptible to Fiji and mosaic diseases. On the other side of the ledger, however, are the excellent experimental yields recorded for Q.25 and its high resistance to downy mildew disease. We know downy mildew to be much the more difficult disease to control and we believe that the reduced labour of controlling downy mildew in Q.25 (as compared with P.O.J.213 and P.O.J.2878), and its higher yields, will much more than offset any expense involved in controlling mosaic and Fiji diseases.

The seedling Q.10 was the most prominent of the varieties tested in the far north and it figured in no less than 23 trials in that section of the State. Owing to its tall growth and tendency to shoot at the top eyes, and to lodge, this variety is definitely not suited to rich "Badila" lands; it has performed well on the poorer lands and is worthy of consideration by Northern farmers, particularly in view of its excellent sugar content, early maturity, and quick and sure striking and ratooning. It is susceptible to grub attack, but recovers rapidly after fumigation and recommences growth; resistance to gumming disease is good and in this respect it compares more than favourably with Clark's Seedling.

Juno, Vulcan, and Brutus, three seedlings raised by the Colonial Sugar Refining Company on the Herbert River, were tested further in two trials as well as being planted in several farm observation plots. Juno appears to be the best of the three, but although a vigorous cane, with fair to good sugar content, it has proved an unreliable germinator and is likely to ratoon badly if cut early in the season.

Q.2 (twelve trials) continued to produce good plant crops of fairly good sugar content, but early cut ratoons are slow to get away and usually show a marked falling off in yield. The very high resistance to beetle borer, and quite appreciable resistance to cane grub attack exhibited by this variety, should make it a useful cane in restricted areas; it is somewhat susceptible to gumming and downy mildew diseases. The generally low sugar content of Q.19, coupled with its disease susceptibility, have resulted in this variety being discarded. Q.13 has also been discarded on account of its great liability to wind damage (as shown during the cyclone of April, 1940) and shy ratooning.

Two trials with the Mackay raised seedling, Q.20, in the Lower Burdekin district showed this variety in a very favourable light. However, it should be borne in mind that the cyclone produced abnormal conditions and the naturally lodging habit of Q.20 no doubt enabled it to withstand wind damage better than the more erect varieties. Accordingly, it is to be recommended that some caution be exercised in planning future plantings with this variety until we have had one or two more season's experience with it.

Q.20 was also included in six trials harvested in the Mackay district. It proved superior to the standard variety in three trials and inferior in three, thus conforming to its previous reputation of a little-better-than-medium variety. Its chief faults are a sprawling habit and somewhat unreliable germination; its virtues are high sugar content, high purity, resistance to downy mildew and fairly strong ratooning. Two new varieties, Comus (raised by the Colonial Sugar Refining Company) and Q.28, were given a preliminary testing and showed sufficient promise to warrant their being tested on a more extensive scale this year. The variety, Jason (also raised by the Colonial Sugar Refining Company), was also under trial but did not compare very favourably with Comus and Q.28, although its disease resistance warrants further trial in "grubby" country. Comus is susceptible to mosaic disease and would therefore not be suitable for planting on river flat country.

Outstanding results were obtained in trials in the Bundaberg district where Q.25 was tested as a one-year cropper in comparison with P.O.J.2878 and Co.290. In each trial, it definitely outyielded P.O.J.2878, both in tons of cane and sugar per acre; Co.290 produced a very slightly higher average yield of cane per acre, but figures for sugar content of cane were markedly in favour of Q.25, which in five trials averaged 15.7 C.C.S., as compared with 12.5 for Co.290. Evaluation of these trial results must take cognizance of the fact that P.O.J.2878 occupies its prominent place in Southern Queensland largely as a result of its excellent standover qualities and is not now usually harvested as a one-year-old plant crop. Q.25, on the other hand, has shown no promise of utility as a standover cane and it is therefore unlikely that it will be a serious competitor of P.O.J.2878. If the initial promise of the trials here recorded is sustained, it is obvious that Q.25 must displace a good proportion of the plantings of Co.290 and P.O.J.213. Co.290, particularly, has served the district well, and is a remarkably cheap cane to grow, but has suffered the disability of a generally low sugar content.

Q.25 must be further tested under ordinary farm conditions before its true value can be accurately assessed, but its vigorous growth, combined with a consistently high sugar content, make it attractive. If widely grown, its high resistance to downy mildew would greatly relieve the task of the Bundaberg Cane Disease Control Board in controlling that particular disease; conversely the susceptibility to Fiji and mosaic diseases will demand constant vigilance, but the control of these two diseases is much more simple than the control of downy mildew. Susceptibility to Fiji and mosaic will probably prevent growth of this variety on river flat lands, while cultivation on irrigated farms will require careful supervision.

As emphasised in the introduction to this Bulletin, farmers should assess the possible value of any new variety mainly by reference to trials within their own district and conducted on the same soil type; otherwise conclusions are likely to be misleading.

Messrs. A. S. and F. W. Hardwick's Farm, Mowbray, Mossman.

Soil Type.—Silty alluvial. **Nature of Crop.**—First Ratoon.
Age of Crop.—15 months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	23·8	**14·4**	13·8	17·6
Q.2	23·9	13·6	13·4	18·2
Q.10	**27·5**	14·2	**14·0**	**18·8**

DISCUSSION.

The plant crop was harvested early, in 1939, and the dry spell which followed did not assist ratoons. This soil type does not hold moisture well, and the season was definitely unfavourable for the crop. Q.10 has given a good account of itself here: the C.C.S. in 1940 was particularly good.

Mr. J. Cunningham's Farm, Smithfield, Cairns.

Soil Type.—Sandy alluvial. **Nature of Crop.**—Plant Cane.
Age of Crop.—15 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	23·2	18·6
Clark's Seedling	22·1	18·7
Q.10	**24·7**	**19·3**
Q.13	22·2	18·9
Q.19	24·4	16·7

DISCUSSION.

Although the cane germinated well, very dry conditions which followed caused the crop on this sandy soil to suffer severely. Q.10 appeared to withstand the droughty weather best. Q.13 was damaged by wind during the cyclonic disturbance. When harvested, the crop was again very parched, and the high C.C.S. figures record the dryness of the sticks.

Mr. A. Anich's Farm, Mossman.

Soil Type.—Light brown schist. **Nature of Crop.**—Plant Cane.

Age of Crop.—14½ months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Clark's Seedling	35·8	17·4
Q.10	30·1	16·2
Q.13	30·2	17·3
Q.19	32·5	16·1

DISCUSSION.

The canes germinated well, but dry spring weather checked growth. Favourable conditions during the wet season assured a good crop, but some plots suffered from excessive wetness. Clark's Seedling gave the best yield of cane and was highest also in C.C.S. Q.10 arrowed freely.

Mr. G. F. Mohammed's Farm, Sawmill Pocket, Edmonton.

Soil Type.—Reddish brown schist. **Nature of Crop.**—Plant Cane.

Age of Crop.—15 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
S.J.4	27·2	18·0
Q.10	25·4	18·9
Q.13	25·6	18·4
Q.19	24·1	17·4

DISCUSSION.

Heavy rain following planting caused a poor germination, but the supplies assured a satisfactory stand of cane. The summer drought affected the crop, but all varieties made good progress during the wet season. The standard variety gave the best yield, but Q.10 again showed an exceptionally high C.C.S.

Mr. T. S. Carne's Farm, Meringa.

Soil Type.—Schist loam. **Nature of Crop.**—Plant Cane.

Age of Crop—13 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Clark's Seedling	27·4	17·2
Q.10	27·8	17·6
Q.13	25·8	**17·7**
Q.19	**28·9**	17·0

DISCUSSION.

Due to early dry weather, crop growth was somewhat uneven. Q.10 showed good colour, though Q.13 appeared to stool best. The crop grew well during the wet season, but a dry spell prior to harvest prevented late growth. Q.19 gave the heaviest cane yield, but was definitely inferior in sugar content. Q.10 showed the best all-round performance.

Messrs. Provera and Company's Farm, Kamma.

Soil Type.—Schist loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—12 months. **Harvested**—September, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	25·7	**17·0**	26·5	**18·6**
Vulcan	28·8	14·8	29·0	17·4
Juno	30·9	16·2	**31·8**	17·8
Brutus	**31·6**	16·2	30·9	16·7

DISCUSSION.

The cane ratooned completely: Brutus was rather slow and light, but Juno was very satisfactory. Brutus provided poor cover and permitted weed growth; Juno provided good cover. The latter variety displays promise for these conditions, and is being tested on a field scale this year.

Mr. R. J. Cowie's Farm, Edmonton.

Soil Type.—Schist loam (stony). **Nature of Crop.**—First Ratoon.

Age of Crop.—10½ months. **Harvested.**—July, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
S.J.4	26·4	15·7	**26·6**	13·2
Q.2	28·3	16·4	21·1	15·3
Q.10	**28·4**	**17·5**	21·8	**16·3**

DISCUSSION.

All varieties ratooned well; Q.10 was especially rapid and complete. Dry weather checked growth in the early summer, but the canes eventually gave satisfactory crops. S.J.4 demonstrated its excellent ratooning qualities, and actually gave a better ratoon than plant crop yield. Q.10 showed the best C.C.S. value early in the season, when S.J.4 was far from mature.

Mr. C. H. Carne's Farm, Aloomba.

Soil Type.—Schist alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—12 months. **Harvested.**—August, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	38·5	15·3	33·5	**16·9**
Vulcan	37·2	13·6	32·4	14·3
Juno	40·2	**15·4**	**34·8**	15·8
Brutus	**40·9**	14·3	34·4	14·4

DISCUSSION.

The standard variety ratooned best, while Brutus was very slow, and stooled poorly. Juno arrowed in May. There was nothing amongst the varieties in so far as cane yields were concerned, but Badila was easily the best in C.C.S.

Messrs. Gadaloff Bros.' Farm, Aloomba.

Soil Type—Old alluvial loam. **Nature of Crop.**—Second Ratoon.

Age of Crop.—14 months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.		Second Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.	Tons.	Per cent.
Badila ..	20·3	17·0	27·8	16·5	22·3	18·6
Korpi ..	21·6	**17·5**	27·6	**16·9**	19·3	**19·1**
P.O.J.2878 ..	28·5	16·0	32·9	14·3	**29·1**	17·8
P.O.J.2725 ..	**32·5**	14·6	**36·9**	14·9	26·6	17·0

DISCUSSION.

The P.O.J. varieties ratooned strongly, while Badila and Korpi were weak. The plots showed good progress throughout, but the P.O.J. canes again demonstrated their superior yielding quality. The trial was harvested later than in previous years, so that these varieties had an opportunity to mature. P.O.J.2725 arrowed very freely, and its sprawling habit was again in evidence. P.O.J.2878 gave the heaviest tonnage, with a very satisfactory C.C.S.

Mr. M. Feldman's Farm, McDonnell Creek, Babinda.

Soil Type.—Gravelly loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—13 months. **Harvested.**—June, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	22·5	15·6
Q.10	22·7	15·5
Q.13	22·8	**16·2**
Q.19	**27·0**	12·6

DISCUSSION.

Q.10 and Q.13 made the best early growth, and appeared much better than the Badila. Q.19 commenced slowly, but made the best late growth, and outyielded the other varieties. Q.13 was damaged by wind during the cyclonic disturbance. Although harvested early in the season, Q.13 showed very good C.C.S.; Q.19 was, as usual, definitely inferior to the other varieties in this respect.

Mr. A. P. Morelli's Farm, Babinda.

Soil Type.—Gravelly loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—13½ months. **Harvested.**—September, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	23·6	15·6	23·7	18·3
Q.2	25·8	13·6	20·4	16·2
Q.10	25·6	14·3	22·2	17·6

DISCUSSION.

Q.2. ratooned weakly, as is customary early in the season, and the plots were supplied with Badila. Q.10 made the best early growth, but it arrowed rather freely. The standard gave the best cane tonnage and C.C.S., though Q.10 performed satisfactorily.

Mr. H. Hodgson's Farm, Garradunga.

Soil Type.—Red volcanic loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—11 months. **Harvested.**—July, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	29·8	14·2	19·6	12·6
Q.2	30·1	10·7	16·9	11·8
Q.10	30·6	13·9	21·2	13·3

DISCUSSION.

The canes in this trial made fair growth: Q.10 demonstrated a general superiority throughout, and when harvested it gave the highest tonnage and C.C.S. The variety appears suited to this soil type.

Estate of C. Ryan, Daradgee.

Soil Type.—Red volcanic loam. **Nature of Crop.**—Second Ratoon.

Age of Crop.—14 months. **Harvested.**—November, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.		Second Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.	Tons.	Per cent.
Badila ..	28·1	15·4	16·1	16·5	15·9	**17·6**
Q.4	**32·8**	13·8	..	..	..	..
Q.10	30·0	**16·1**	**19·6**	**17·1**	**17·4**	16·0
Q.12	31·2	14·8	..	..	..	..

DISCUSSION.

Throughout the three crops which have been harvested from this site, Q.10 has maintained a general superiority in yield and C.C.S. The inferior sugar content of the second ratoon crop may have been due to overmaturity, as this variety ripens early in the season.

Estate of C. Ryan, Daradgee.

Soil Type.—Red volcanic loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—12 months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	20·8	14·9
Comus	25·1	14·0
Q.10	25·2	15·8
Q.13	23·6	**16·1**
Q.19	**28·7**	14·7

DISCUSSION.

A good crop of cowpea was ploughed under during the fallow. The soil was in good order when planted, and the germination was satisfactory. Crop growth was quite good throughout, and Q.19 again demonstrated its good yielding capacity. Varieties Comus (bred by the C.S.R. Co.) and Q.10 also outyielded the standard, which suffered some grub damage. Q.13 gave the highest C.C.S. value though Q.10 was but slightly inferior.

Mr. H. W. O'Brien's Farm, Goondi.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—14 months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	25·7	16·2
Q.10	25·5	16·7
Q.13	29·4	**16·8**
Q.19	24·2	15·9
Co.421	**37·5**	13·2

DISCUSSION.

Following a crop of cowpeas, the soil was in good order when planted; due to dry weather, the germination was only fair and a number of supplies were necessary. Growing conditions throughout were subnormal. Co.421, a new and vigorous seedling from India, easily outyielded all other varieties; it is a rankly-growing, thin, high-fibred cane of poor quality, difficult to cut and with tightly bound trash. It is unlikely that such a cane will find favour in these parts. Q.13 was the best of the remaining varieties.

Messrs. Pasinetti Bros.' Farm, Goondi.

Soil Type.—Schist loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—14 months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Pompey	23·5	11·6	**17·8**	15·4
Q.2	**24·9**	15·2	12·2	15·5
Q.10	23·2	14·7	12·6	15·8
Q.13	23·3	16·0	13·2	**17·0**
Q.19	24·5	**16·3**	15·2	16·8

DISCUSSION.

The lower end of this field was flood damaged during excessive wet weather, and several of the plots suffered as a consequence. Rat damage was also in evidence, and Q.10 suffered most in this respect.

Mrs. R. Wiles' Farm, Mundoo, Innisfail.

Soil Type.—Old alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—13 months. **Harvested.**—August, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Pompey	**34·8**	11·1	**30·5**	12·1
Q.2	28·7	12·4	20·2	14·9
Q.10	29·0	**15·3**	26·3	**15·8**

DISCUSSION.

The crop on this site made satisfactory growth, and again Pompey gave the highest yield of cane per acre. But Q.10 was much superior in C.C.S., and must be regarded as the most valuable variety for these conditions on the basis of the present experiments.

Mrs. M. L. McCarthy's Farm, Bombeeta, South Johnstone.

Soil Type.—Red schist loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—13½ months. **Harvested.**—July, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	23·5	15·0
Q.10	27·1	**15·3**
Q.13	24·9	15·2
Q.19	**28·4**	11·3

DISCUSSION.

The canes germinated well, notably Q.10 and 19, and they made better early growth than the standard. Q.19 gave the highest yield of cane per acre, but it was definitely of inferior sugar content. Q.10 showed the best all-round performance, outyielding the standard in cane yield and C.C.S.

Mr. P. J. Riordan's Farm, Mourilyan.

Soil Type.—Alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—11 months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	34·1	**16·8**	28·2	**17·5**
Q.2	**36·8**	15·9	**30·6**	15·9
Q.10	**36·8**	16·6	24·8	16·6

DISCUSSION.

All varieties ratooned well and made satisfactory growth throughout. When harvested, Q.10 showed considerable damage by rats; this was also in evidence in the Badila which, however, gave the best all-round performance.

Mr. V. Cataldo's Farm, Mourilyan.

Soil Type.—Schist loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—11 months. **Harvested.**—September, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	35·4	16·0	26·6	**16·7**
Q.2	**37·6**	13·4	28·1	13·2
Q.10	35·4	16·3	28·6	15·7
Q.13	36·2	**16·7**	**31·8**	15·9
Q.19	36·0	14·9	29·2	15·0

DISCUSSION.

All varieties ratooned well, though Q.2 and Q.19 were somewhat slow. Q.13 have the heaviest tonnage, though Badila showed the highest sugar content. Q.10 was rat damaged, while Badila also suffered in this respect.

Mr. G. Marano's Farm, Mourilyan.

Soil Type.—Sandy loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—14½ months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	11·2	16·7
Clark's Seedling	15·4	16·5
Q.10	16·9	15·9
Q.13	15·7	16·4
Q.19	17·1	15·8

DISCUSSION.

All varieties struck and stooled well, and made good progress till checked by dry weather in the early summer. The severe growth check on this soil of poor moisture-holding capacity was chiefly responsible for the light yields recorded. Q.19 gave the highest yield of cane per acre, while Badila was definitely unsatisfactory under the unfavorable conditions.

Mr. G. Basso's Farm, Silkwood.

Soil Type.—Alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—11½ months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Clark's Seedling	23·4	17·4	17·4	17·1
Q.2	23·5	16·3	17·4	16·9
Q.10	20·1	17·0	11·8	17·4

DISCUSSION.

All canes in this trial gave disappointing ratoon crops, due largely to the damage to stools suffered by the plant cane. The effect was most marked with Q.10.

Mr. F. N. King's Farm, Jaffa.

Soil Type.—Alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—12½ months. **Harvested.**—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	23·6	**16·0**	20·5	**17·9**
Q.2	**30·2**	15·3	**23·1**	16·2
Q.10	25·5	14·8	19·0	17·0

DISCUSSION.

Variety Q.2 has yielded the heaviest crop both of plant and first ratoon cane. Badila has, on each occasion, given the better C.C.S. value. This trial was planted with rows 4 feet apart: this definitely has favoured the erect-growing Q.2.

Mr. A. M. Cousin's Farm, Feluga, Tully.

Soil Type.—Gravelly loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—12 months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	19·6	**15·5**
Q.10	20·1	13·9
Q.13	16·6	14·9
Q.19	**23·3**	10·4

DISCUSSION.

All canes made good early growth, but Q.13 was severely damaged by the cyclonic storm in February. Q.19 gave the heaviest weight of cane per acre, but, as usual, showed a low C.C.S. value. The standard (Badila) appears to be the best variety under these conditions.

Mr. J. P. Kelleher's Farm, Tully.

Soil Type.—Alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—10½ months. **Harvested.**—June, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	37·8	11·9	25·7	13·2
Q.2	37·7	11·3	24·3	11·3
Q.10	34·6	**12·3**	20·3	**13·4**
Q.13	41·2	11·5	20·7	12·7
Q.19	**48·2**	8·2	**27·9**	7·8

DISCUSSION.

Variety Q.19 has given the heaviest cane tonnage for each crop: but as the cane was harvested early in the season, the C.C.S. has been disastrous. Badila appears to be the best variety for these conditions.

Mr. J. Kourikoski's Farm, Tully.

Soil Type.—Alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—10 months. **Harvested.**—September, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	29·5	**17·3**	**22·9**	**17·3**
Q.2	**30·9**	16·5	22·5	16·4
Q.10	29·2	15·9	**22·9**	16·5

DISCUSSION.

All these varieties have given remarkably uniform yields in both crops. Badila has, however, shown the best C.C.S. return. Had the crop been harvested earlier in the season, the early maturity of Q.10 might have shown to advantage.

Messrs. Gray and Sons' Farm, Airdmillan, Ayr.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—15 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Badila	45·1	14·7
Q.20	**53·0**	**16·8**

DISCUSSION.

This trial made excellent growth and was so well advanced that it was wind damaged during the cyclonic storms early in 1940. The Badila suffered most: Q.20, with its sprawling habit, withstood the blow remarkably well. It gave the better cane tonnage as well as the higher C.C.S. It is doubtful if this performance would be repeated in a normal year.

Messrs. Hurney Bros. and Howes' Trial, Home Hill.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—15 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Clark's Seedling	25·2	15·7
Q.20	**30·0**	**16·1**

DISCUSSION.

In this trial also, Q.20 exceeded the standard variety in yielding capacity. Again the sprawling habit of the Q.20 may have been responsible for its apparent superiority, as it would suffer less wind damage than an upstanding variety.

Messrs. L. and J. Senini's Farm, Mt. Pelion, Mackay.

Soil Type.—Alluvial silty loam
Nature of Crop.—First Ratoon.
Age of Crop.—14 months.
Harvested.—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
M.1900	42·1	10·8	**26·5**	14·8
Q.20	**43·3**	**15·1**	25·4	**17·4**

DISCUSSION.

Both varieties gave satisfactory yields as first ratoons, and this time 1900 Seedling gave the better tonnage per acre: but once Q.20 showed a greatly superior C.C.S. content, although both crops were harvested in October. This is a little difficult to understand.

Messrs. Gill and Co.'s Farm, Rocklea, Mackay.

Soil Type.—Rich alluvial loam.
Nature of Crop.—First Ratoon.
Age of Crop.—12 months.
Harvested.—October, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
S.J.2	**53·7**	16·8	**26·0**	**17·4**
Q.20	42·9	**16·9**	23·3	17·0

DISCUSSION.

Q.20 gave a good ratoon, but it arrowed heavily, while S.J.2 continued to grow. The sprawling habit of Q.20 is something of an objection, but it compared quite favourably with S.J.2, in both yield and C.C.S., as a ratoon crop. The second ratoons should provide results of interest.

Mr. A. Smoothy's Farm, Mia Mia, via Mirani.

Soil Type.—Rich alluvial loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—10 months. **Harvested.**—August, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Badila	33·8	**15·1**	20·8	10·0
Q.20	**41·4**	13·4	**31·1**	**12·8**

DISCUSSION.

Both varieties ratooned well and grew satisfactorily. The wet season caused extreme flooding in 1940, and this was responsible for damage chiefly to Badila, from silt and debris. Much of the Badila was dead when harvested, while Q.20, though twisted and lodged, was in a good healthy state. It was therefore superior both in tonnage and C.C.S.

Messrs. Mau and Dunn's Farm, Homebush Road, Mackay.

Soil Type.—Brown forest loam. **Nature of Crop.**—First Ratoon.

Age of Crop.—11 months. **Harvested.**—August, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
Q.813	**39·2**	15·9	24·7	15·3
Q.20	36·2	**16·5**	**25·3**	**16·2**

DISCUSSION.

Both varieties ratooned quickly and well and made good growth throughout the season. Q.20 arrowed freely, but it exceeded Q.813 both in yield of cane per acre and in C.C.S. This is in conformity with experience on the Mackay Experiment Station, when Q.813 was the standard variety of the trials.

Messrs. Mau and Dunn's Farm, Homebush Road, Mackay.

Soil Type.—Brown sandy loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—14 months. **Harvested.**—October, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Q.20	17·9	16·0
Q.28	30·0	15·2
Q.813	24·1	15·8
Jason	23·8	15·9
Comus	**33·7**	**16·1**

DISCUSSION.

In this trial were included two of the better seedlings produced to date at Mackay, with Jason and Comus—seedlings bred by the C.S.R. Company. Comus has given a very good account of itself in this trial, both in cane yield and C.C.S. Q.28 is a variety with good growth vigour which promises to perform well under Mackay conditions. Further comment on these varieties will be reserved until the ratoon yields are available.

Mr. H. Ivers' Farm, Rosella, Mackay.

Soil Type.—Forest sandy loam. **Nature of Crop.**—First Ratoon.
Age of Crop.—12 months. **Harvested.**—November, 1940.

SUMMARY OF CROP YIELDS.

Variety.	Plant Crop.		First Ratoon Crop.	
	Cane per Acre.	C.C.S. in Cane.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.	Tons.	Per cent.
S.J.2	37·2	**17·2**	**15·6**	**17·2**
Q.20	**37·7**	17·1	12·9	16·2

DISCUSSION.

Both varieties were handicapped by the wet season rains which came before the crop was well advanced. The yields were poor, but S.J.2 was better both in cane tonnage and C.C.S. Q.20 arrowed freely and early.

Messrs. G. and G. Palu's Farm, North Gooburrum.

Soil Type.—Red forest sandy loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—14 months. **Harvested.**—October, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	38·3	12·6
Q.25	**45·5**	**13·6**

DISCUSSION.

Both varieties made good early growth, but under the conditions (the canes were irrigated) Q.25 was always ahead of the Wonder Cane and showed up to 9 feet of good heavy cane when the crop was harvested. It also excelled P.O.J.2878 in C.C.S. content.

Mr. H. F. Rehbein's Farm, Sandhills Road, Bundaberg.

Soil Type.—Red volcanic loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—13 months. **Harvested.**—August, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Co.290	**18·1**	10·9
Q.25	17·9	**15·8**

DISCUSSION.

The crop was produced under adverse conditions. It lacked soaking rains at a time when these would have been most beneficial. It will be noted that there was no difference in cane yield, but the new variety was very much superior to Co.290 in sugar content.

Mr. M. J. Hynes' Farm, Oakwood.

Soil Type.—Red forest sandy loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—12½ months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	23·4	16·1
Q.25	**34·0**	**17·3**

DISCUSSION.

Both varieties germinated well, but Q.25 assumed an early lead in growth, which it maintained throughout the season. It exceeded the yield of the Wonder Cane by about 50 per cent., and also was a unit better in C.C.S.

Messrs. W. Kirby and Son's Farm, Rubyanna.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—13 months. **Harvested.**—October, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	**38·1**	**17·3**
Jason	29·0	15·8

DISCUSSION.

The standard variety germinated well, but the Jason had to be supplied heavily due to borer-damaged eyes. The varieties made good growth throughout, but the Wonder Cane was always definitely superior. It also gave the better C.C.S. return when the crop was harvested. Jason arrowed heavily.

Messrs. Wadsworth and Faulkner's Farm, Wallaville.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.
Age of Crop.—14 months. **Harvested.**—September, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	36·2	9·4
Q.25	38·7	11·1

DISCUSSION.

Both varieties stooled well and made good growth: Q.25 appeared to be slightly in the lead throughout the season, but the differences at harvest time were not great. However, Q.25 was ahead in cane yield as well as C.C.S. This rich river flat country suffers frost damage, and the land was irrigated in July as a precaution. The crop also had a watering six weeks after planting to assist the germination.

Fairymead Sugar Co., Hapsburg Plantation, Childers.

Soil Type.—Red volcanic loam **Nature of Crop.**—Plant Cane.
Age of Crop.—14½ months. **Harvested.**—November, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	29·1	13·1
Co.290	46·4	12·8
Q.25	41·4	15·2

DISCUSSION.

On this area of moist volcanic soil, excellent growth was made by both Co.290 and Q.25. On cane tonnage, the Indian cane was the better yielder, but as it was 2.4 units of C.C.S. inferior to Q.25 when harvested, the honours rest with the new Queensland seedling. As a one-year cane, P.O.J.2878 was at a disadvantage: this variety excels as a standover crop.

Fairymead Sugar Co., Springhill Plantation, Bundaberg.

Soil Type.—Red volcanic loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—14½ months. **Harvested.**—November, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
P.O.J.2878	37·5	15·1
Co.290	50·5	12·5
Q.25	50·1	16·1

DISCUSSION.

Co.290 and Q.25 gave practically identical cane yields, under irrigation conditions, on this plantation, but Q.25 was markedly superior to both the Java Wonder and Co.290 in overall performance. Again, it should be noted that P.O.J.2878 would have been favoured by a longer growing season and preferably if harvested as standover cane.

Fairymead Plantation, Bundaberg.

Soil Type.—Alluvial loam. **Nature of Crop.**—Plant Cane.

Age of Crop.—14 months. **Harvested.**—October, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Co.290	32·4	13·0
Q.23	20·0	14·3
Q.25	32·2	15·1

DISCUSSION.

On this area of alluvial, Co.290 and Q.25 again showed equal cane yielding capacity, but, as before, the Queensland seedling was far superior in C.C.S. Q.23 is another seedling cane which was propagated at Bundaberg, and showed good early promise. This was not sustained in the present trial.

Fairymead Plantation, Bundaberg.

Soil Type.—Alluvial loam.
Nature of Crop.—Plant Cane.
Age of Crop.—14 months.
Harvested.—October, 1940.

CROP YIELDS.

Variety.	Cane per Acre.	C.C.S. in Cane.
	Tons.	Per cent.
Co.290	26·3	13·3
Q.23	18·2	14·4
Q.25	27·2	16·3

DISCUSSION.

The results of this trial parallel closely those reported above. Q.25 was slightly ahead of Co.290 in cane yield, but 3 units better in C.C.S. Q.23 again displayed definite mediocrity, and it will not be persisted with further.

A. H. TUCKER, Government Printer, Brisbane.